

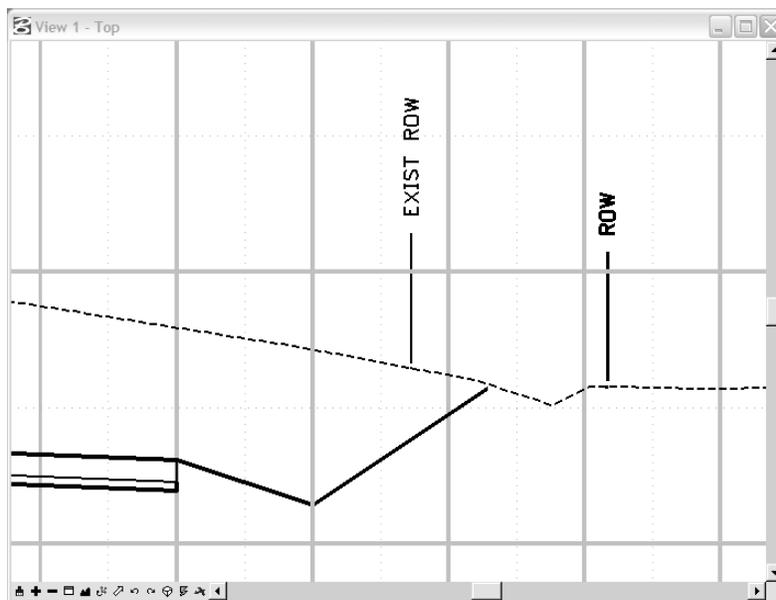
CDOT Alignment Display in Cross Section



This document guides you through the process of displaying the location of alignments such as Right-of-Way locations in cross section or profile views.

Desired result

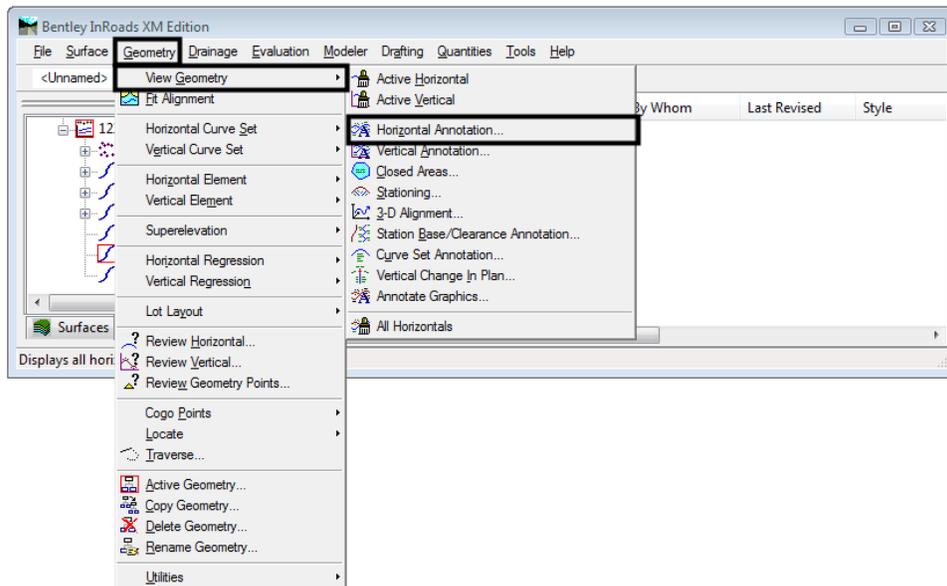
The overall workflow is to create surface features with the appropriate feature styles from the graphic elements representing the alignments. A surface feature that is defined as having breakline properties can be displayed as a 'crossing point' in cross sections or profiles. A cell is used to indicate this 'crossing point'.



Displaying Alignments

Because this process will require that graphic elements are displayed on top of existing graphic elements, it is suggested that this operation is done in a blank, “working” model file. This will reduce the impact to model files that may be used for plan and profile sheets. This workflow assumes that the alignments to be displayed in cross sections have already been created and are in the active *.alg file.

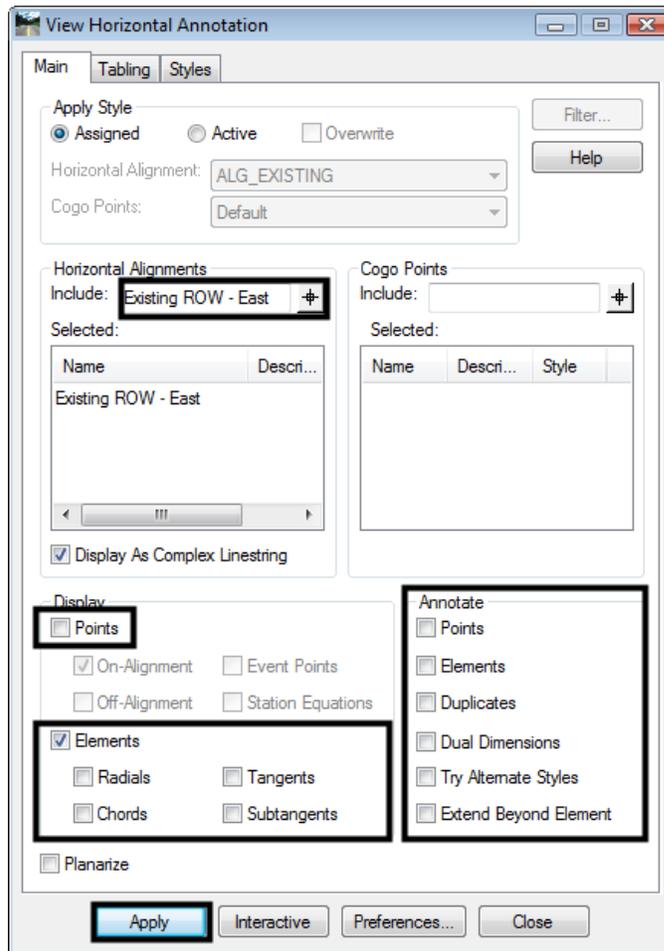
1. Select **Geometry > View Geometry > Horizontal Annotation** from the InRoads main menu.



2. In the **View Horizontal Annotation** dialog box, identify the alignment to be displayed. This can be done by keying in the **alignment name** in the **Include** field or selecting it graphically using the target button.
3. Toggle off the **Points** check box in the **Display** area of the dialog box.
4. Toggle on the **Elements** check box. However, toggle off the **Radials**, **Tangents**, **Cords**, and **Subtangents** check boxes below **Elements**.
5. Toggle off all of the check boxes in the **Annotate** area.

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6. Select **Apply**. The alignment will be displayed.

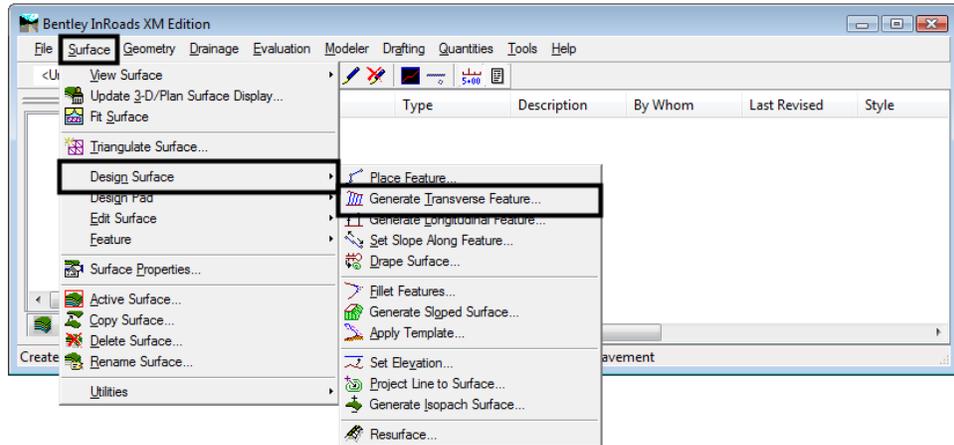


7. Repeat above steps to display additional alignments. Select the **Close** button when finished. Continue to Step 8 after all alignments have been displayed.

Creating Features using Generate Longitudinal Feature

The Generate Longitudinal Feature command will be used to create breakline features from the alignment graphics displayed above. The data created from this procedure will be stored in a dtm created specifically for this information.

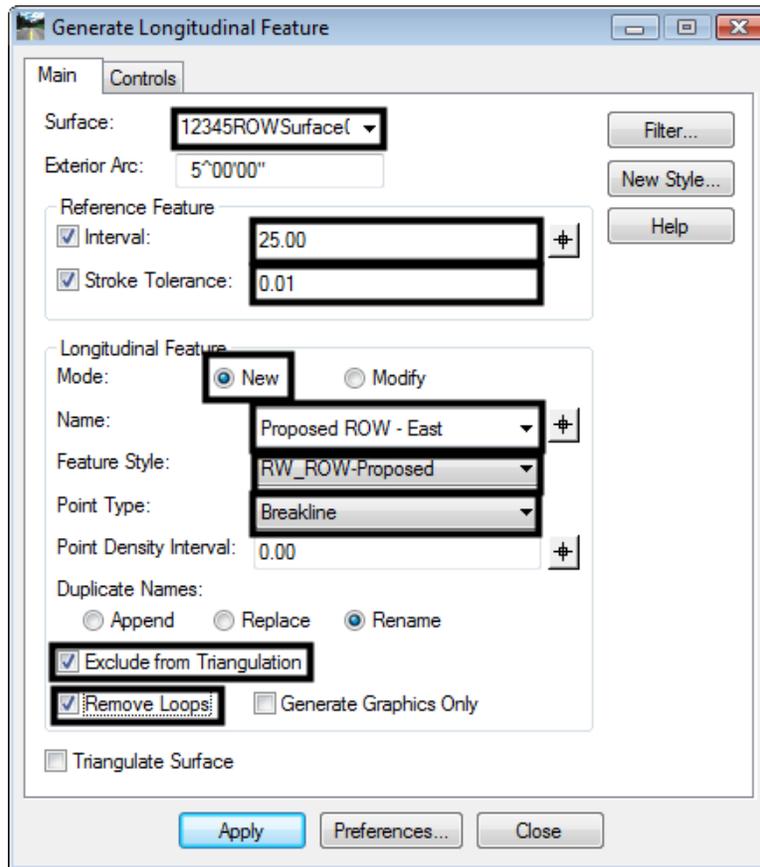
1. Select **Surface > Design Surface > Generate Longitudinal Feature** from the InRoads main menu.



2. On the **Main** tab of the **Generate Longitudinal Feature** dialog box, Key in a **Surface Name** that will contain the alignment data. If the surface already exists, it can be selected using the drop down menu.
3. In the **Reference Feature** area, toggle on the check boxes for **Interval** and **Stroke Tolerance**. Key in the desired **Interval Value** (typically this will be the same value used for template drops and/or cross section intervals). Set the Stroke Tolerance value to **0.01**.
4. In the **Longitudinal Feature Area**, set the **Mode** to **New**.
5. In the **Name** field, key in the desired **Feature Name**. If an existing name is selected from the drop down menu a number will be appended to the name to make it unique.
6. Select the desired **Feature Style** using the drop down menu.
7. Set the **Point Type** to **Breakline**.

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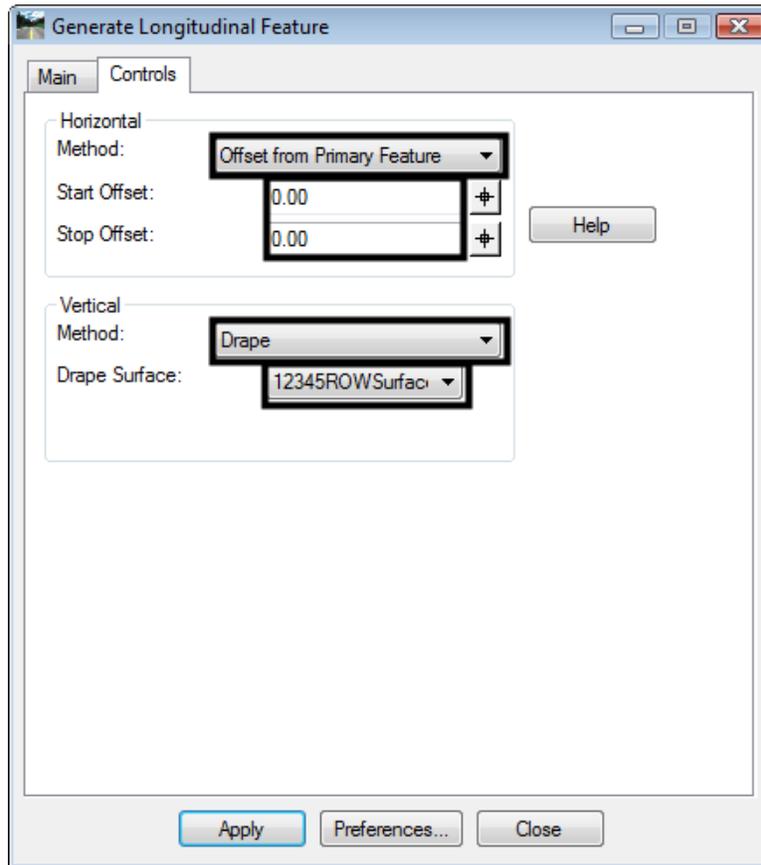
- Toggle on the check box for *Exclude from Triangulation*.
- Toggle on the check box for *Remove Loops*.



- Select the *Controls* tab.
- In the *Horizontal* area, set the *Method* to *Offset from Primary Feature*.
- Set both the *Start Offset* and *Stop Offset* to *0*.
- In the *Vertical* area, set the *Method* to *Drape*.

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14. Set the *Drape Surface* to the existing ground surface using the drop down menu..



15. Select the **Apply** button. Then follow the prompts.

> Identify Primary Element

16. <D> on the alignment graphic.

> Accept/Reject

17. <D> anywhere.

> Identify Reference Element

18. <D> on the same alignment graphic.

> Accept/Reject

19. <D> anywhere.

> Identify beginning/Reset for Entire

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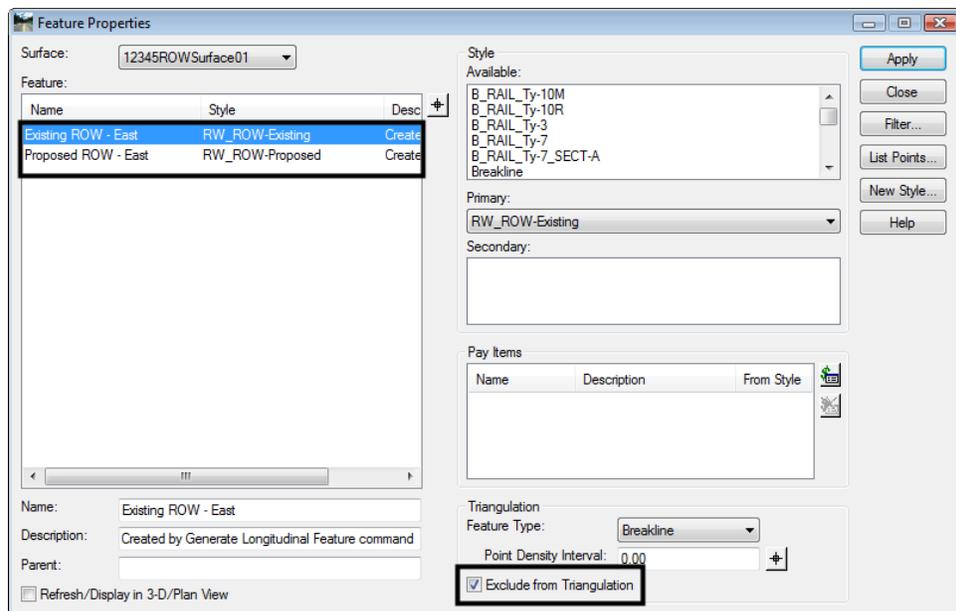
20. <R> to use the whole element.

> Identify location

21. <D> anywhere. This creates a surface feature from the graphic element that has the elevation of the existing ground. A graphic element of the feature is also displayed in the drawing.
22. Repeat the above steps for each alignment.

Data Validation

1. Make sure that the surface containing the new data is the **Active Surface**. From the InRoads pull down menu select **Surface > Feature > Feature Properties**. The *Feature Properties* dialog will appear.
2. *Verify* the features were added to the surface.
3. *Verify* that *Exclude from Triangulation* is checked on for each feature.
4. If changes are made to a feature, <D> **Apply** before selecting the next feature.

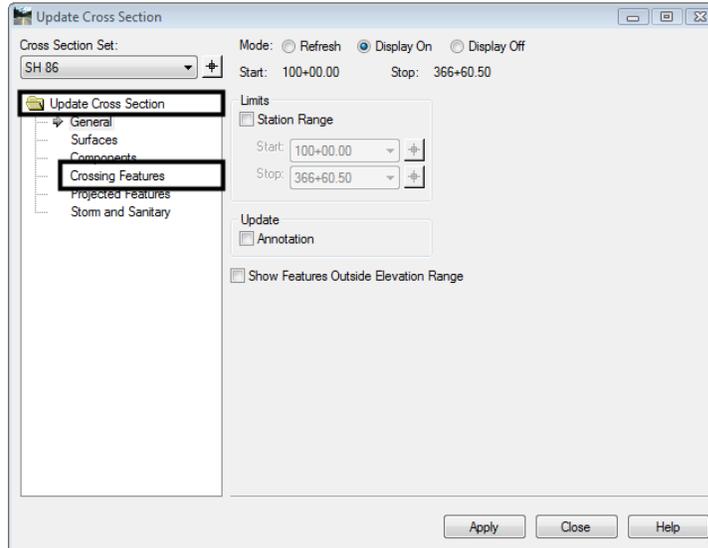


5. <D> Close to dismiss the dialog box.

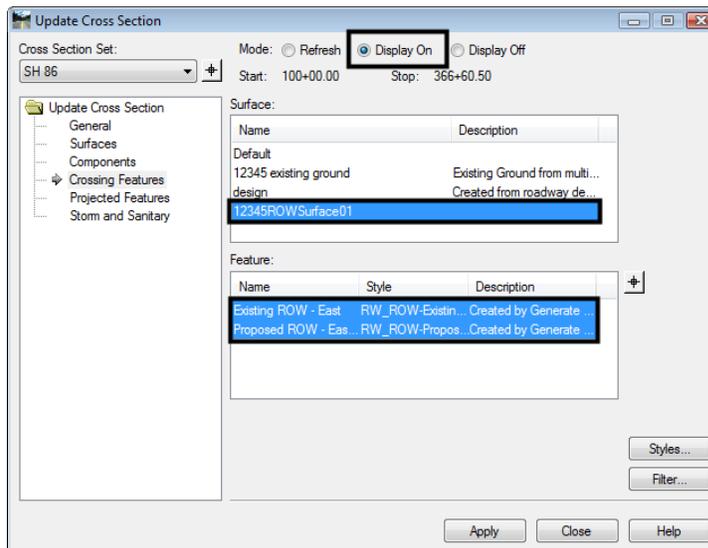
Note: Excluding the features from triangulation eliminates the possibility of the exported alignments becoming part of a surface (contoured) model. Features excluded from triangulation can be displayed in cross sections or profiles as crossing features, which is why these alignments were imported into the Surface as features.

Updating Cross Sections

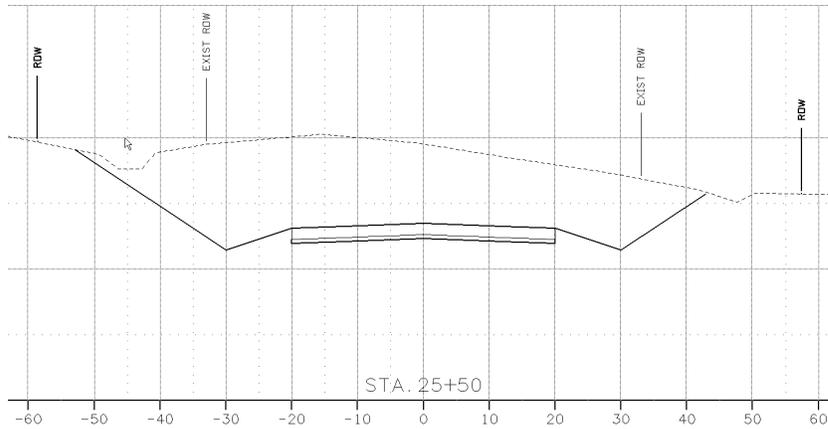
1. Select **Evaluation > Cross Section > Update Cross Section** (or **Evaluation > Profile > Update Profile**) to add, remove, or update the display for the new features.
2. Expand the category list and select **Crossing Features**.



3. Select the desired **Cross Section Set** from the drop-down list.
4. Toggle on the **Display On** radio button.
5. From within the **Surface** list box, <D> on the Surface containing the alignment features.
6. <D> on the Features to be displayed then <D> **Apply**. <D> **Close** to dismiss the window.



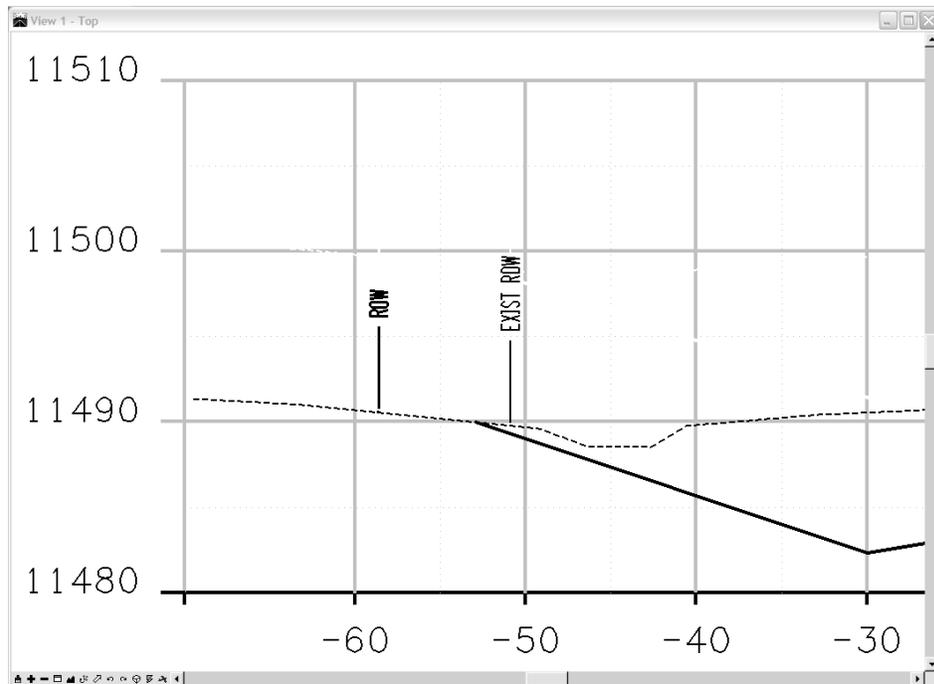
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Note: The InRoads global scale factor values should be set as they were when the cross sections were originally created. Additionally, the default vertical exaggeration for CDOT cross sections is a factor of 2:1. The feature styles used to place the cells depicting the ROW locations have been created at this ratio. See the following workflow to accommodate varying ratios.

Adjusting vertical distortion

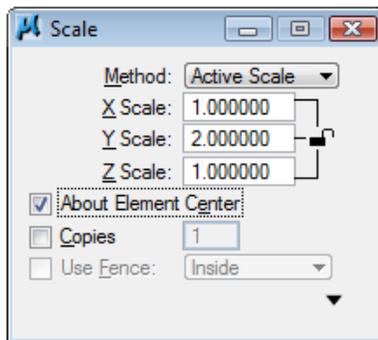
Adjusting vertical scale of cells representing ROW limits can be accomplished in 2 ways. First is scaling the cells placed, second is temporarily modifying the named Symbolologies used to place the cells.



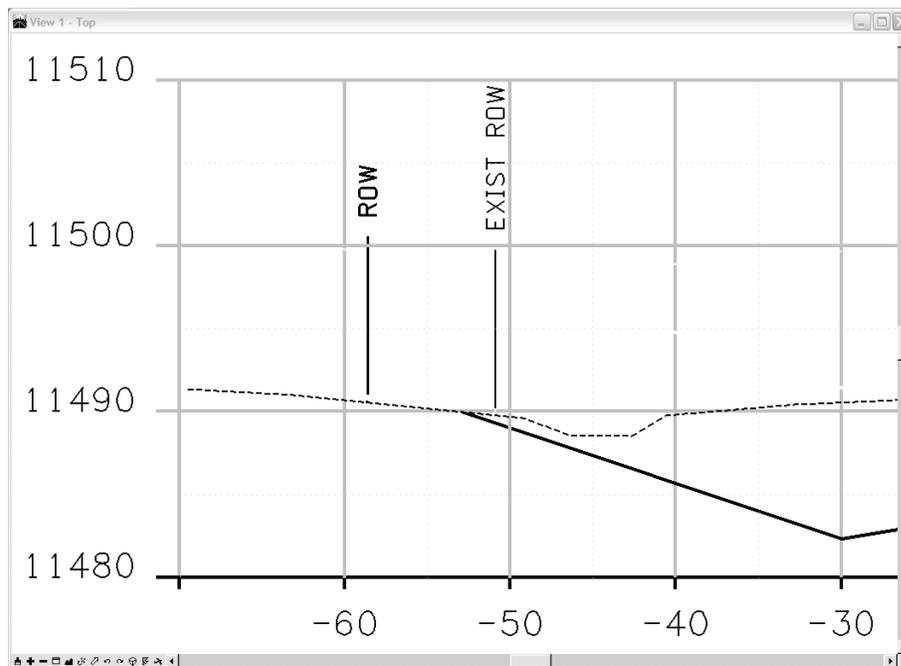
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Method One

1. Select the cells for scaling using the *Element Selection*, *Power Selector*, *Select by Element*, or by isolating the level(s) and using a *Fence*.
2. Initialize the MicroStation *Scale* command
3. Ensure that the *scale lock* is opened as shown in graphic under Step 5. Set *X* & *Z* scale factors to **1**.
4. Set the *Y* scale factor to the appropriate value (**2:1** is the default in the configuration). This example used **1:1** for the cross sections. Consequently, the cells are scaled (distorted) ½ the required amount.
5. Toggle on the *About Element Center* checkbox (scales about the cell origin)



6. <D> in the MicroStation view to execute the scale command



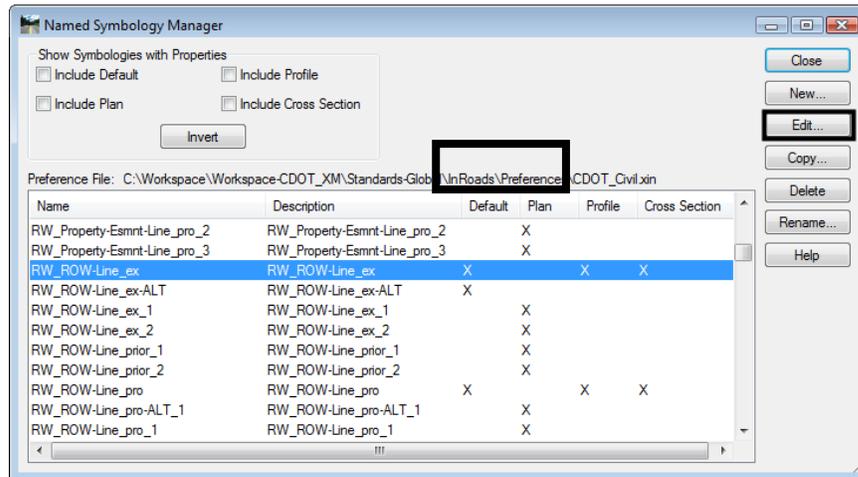
Note: The cells should now be updated to the desired scale factor.

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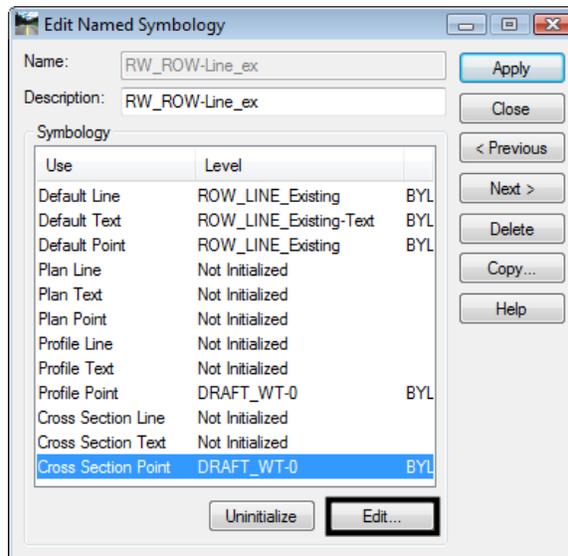
Method Two

The second method is to temporarily modify the named symbology used to place the annotation.

1. Select **Tools > Named Symbology Manager** and the *Symbology Manager* dialog will appear. Identify and highlight the appropriate feature style from the list and **<D> Edit**.



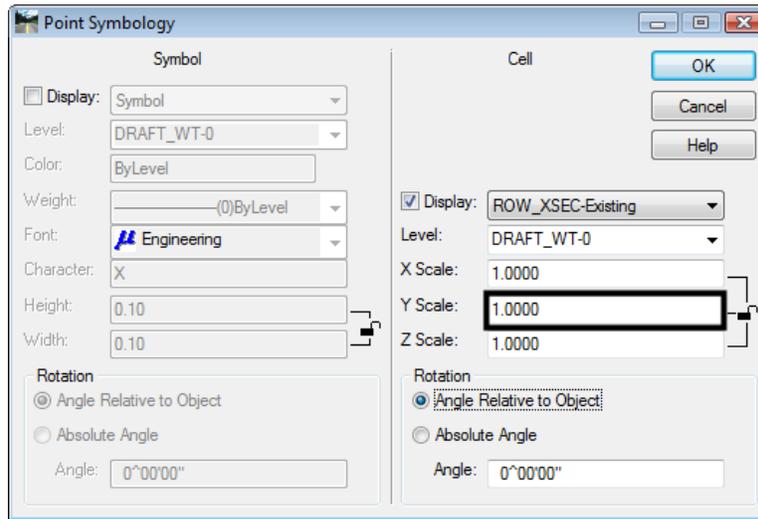
2. Identify and highlight the *Cross Section Point* and **<D> Edit**. The *Point Symbology* dialog now appears.



Note: The *Y Scale* is set to **0.5** by default to compensate for the default vertical distortion of 2:1 as the cell is created proportionally correct as a 1:1 graphic. In other words, when creating a cross section at **2-Vertical:1-Horizontal**, the cell would be stretched a factor of 2. The *Named Symbology* compensates for this by 'offsetting' the effect of vertical distortion.

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3. Set the appropriate **Y Scale** For a cross section without a vertical exaggeration (1:1), input a value of **1** in the **Y Scale** field .



4. <D> OK then <D> Close in the **Point Symbology** dialog.

Note: Other useful values for scaling cells with MicroStation or symbology modification would be:

Vertical exaggeration - Y Scale

1:1 - 1.0

2:1 - 0.5

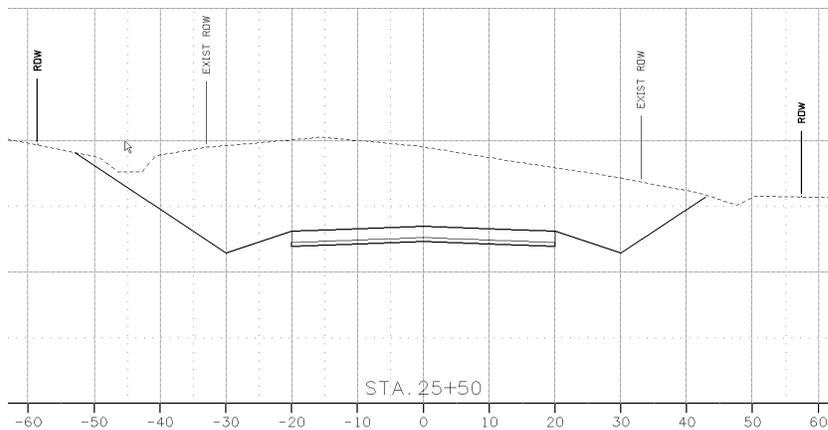
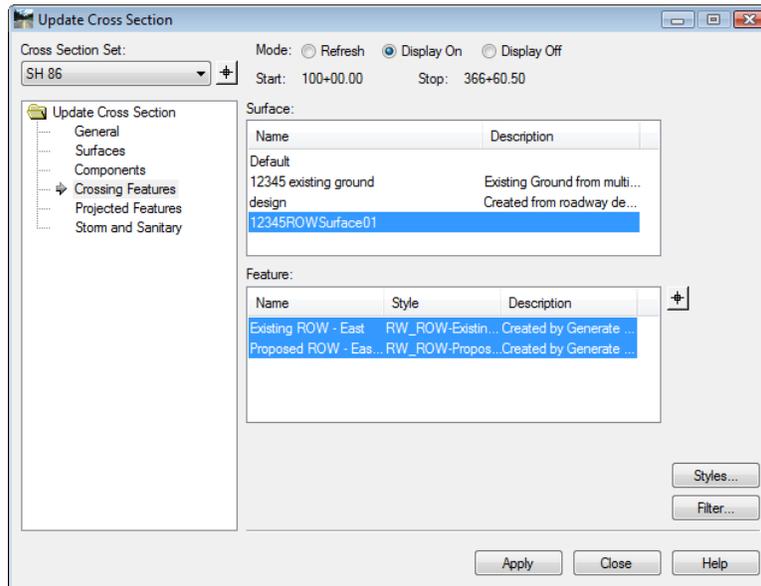
5:1 - 0.2

10:1 - 0.1

5. <D> Apply in the **Edit Named Symbology** dialog. **The Edit Named Symbology** dialog will be dismissed.

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- Use the update commands for Cross Sections or Profiles to add, remove, or update the display for the required features.



- Repeat the above steps for the Feature Style *RW_ROW-Proposed*.